stant improvement in the food-supply or in the siliceous constituent of the water. He has traced the workings of the rule more particularly through the very variable species, *Spongilla lacustris* and *S. fragilis;* in *Meyenia fluviatilis*, in *Heteromeyenia argyrosperma* and *H. Ryderi*, and lastly and most conspicuously in *Tubella Pennsylvanica.* The extremes in this last series differ so widely that they would hardly be taken to belong to the same species, but the intermediate grades have all been collected, largely from the same stream; and as a result several species named in this and other cases, have relapsed into synonyms.

SEPTEMBER 9.

Dr. W. S. W. RUSCHENBERGER, in the chair.

Eleven persons present.

The death of R. E. Rogers, M. D., a member, was announced.

SEPTEMBER 16.

Rev. H. C. McCOOK, D. D., Vice-President, in the chair.

Seventeen persons present.

On the Minute Fauna of Fairmount Reservoir.—Mr. E. POTTS alluded to the difficulties that ordinarily prevent a thorough study of the fixed aquatic fauna, which he described as thereby generally limited to collections from the shallow water near the margins of lakes and streams, or of such forms as may adhere to the few timbers or stones that can be dragged from a greater depth. He therefore urged the importance of making use of such opportunities as are furnished by the temporary drainage of reservoirs, canals, etc., to examine thoroughly the incrustations upon exposed walls and timbers, or on the bed of the stream.

Such an occasion was afforded a few days since, when the accidental breaking of a valve necessitated the drawing off of the water from the Fairmount reservoirs. These are divided by perpendicular walls, eight or ten feet in height, and, unfortunately, facilities were not at hand in the shape of ladders, planks, etc., to enable him to make a minute examination of them. From the margin, however, could be seen at many places patches of the sponges, *Spongilla fragilis* and *Meyenia fluviatilis*, while the cages over the outlet pipes, and, more strikingly, the walls surrounding the main outlet at the southeast corner, were thickly encrusted with *Meyenia Leidyi.* The last-named sponge is very compact and little liable to crumble during the winter season, so that it is probable that the large masses, some of them nearly an inch in thick-

ness, and a foot or two in diameter, represent the aggregation of several years. In a few places, at the base of the walls, the pale green branches of *Spongilla lacustris* could be seen, and occasionally, to the speaker's surprise, slender waving processes of the same species, totally colorless, could be seen reaching up through the mud in little groups upon the bottom. He was surprised, because he had always held that it was impossible for sponges to live upon a muddy bottom, and theoretic reasoning would still suggest that probably only this species, which can thus hold itself up out of the suffocating silt, can survive the constant deposition of siliceous particles. The total amount of sponge growth was relatively small, and the probability of an aqueous taint from it, very remote.

The commensal habit of many of the lower animals who feed by the creation of ciliary whirlpool currents, has been frequently referred to; the weaker current-makers, such as vorticellæ, stentors, and the errant and tubicolous rotifers, planting themselves about the heads of the stronger polyzoa to supply their own nets with what may have escaped from the others. The same instinctive principle which leads all these to locate themselves most plentifully amongst the stones in the rapids of streams, was particularly noticeable in promoting their aggregation upon and in the neighborhood of the inlet and outlet gates of the reservoirs. The feeble currents produced by each can only bring within its reach the floating provision from a very limited area; the volume of water poured through these gates brings to them a rich supply, and the numbers and variety of these organisms increase in proportion. Of the fixed forms were seen amongst the bryozoa, beside one or more undetermined species of *Plumatella—Pectinatella magnifica* and *Urnatella gracilis* of Leidy, and the newly described *Paludicella erecta.* Attached to these were Vorticellæ, Epistilis and Stentors innumerable; *Pyxicola* and *Acineta;* rotifers of various names, including prominently *Limnias* and other, probably undescribed forms among the Melicertidæ. Very abundant among these was the interesting chætobranch annelid, *Manayunkia speciosa* Leidy, which has of late been frequently noticed in this vicinity, and the wonderfully marine-looking hydroid *Cordylophora lacustris.* This last was particularly abundant around the southeast outlet; its stems forming a complete matting over many yards of surface, commingled with bryozoa and sponges in intricate confusion.

A large valve had been removed from a discharging main on the southern side of the reservoir hill, a hundred yards or more from the opening in the bottom of one of the basins, and where all light was consequently absent. An incrustation, averaging perhaps three-eighths of an inch in thickness, upon the inner surface of this valve, was found to be largely composed of the gemmulæ and spicules of *Meyenia Leidyi;* mingled with which were stems of

Plumatella, *Urnatella*, and *Cordylophora lacustris*. The fact that all these can thus thrive in absolute darkness throws some doubt upon the supposed sensitiveness of these forms to the presence or absence of light, as does also the fact that while *Paludicella Ehrenbergi* is said to seek the darkest corners, the speaker found his new species, *P. erecta*, apparently rejoicing in the glare of the full sunlight.

Of course many other creatures than those above named were casually seen in this connection, including chiefly amœbæ, free-swimming protozoans and entomostracans, planarian worms, hydras and aquatic insect-larvæ; but the former are particularly mentioned as among the most interesting and beautiful of those that freely and innocently drink of the same cup with ourselves.

SEPTEMBER 23.

Mr. EDW. POTTS, in the chair.

Nine persons present.

The following papers were presented for publication:—

"A Review of the American Species of the Genus Hemiramphus," by Seth E. Meek and David K. Goss.

"A Review of the American Species of the Genus Teuthis," by Seth E. Meek and Martin L. Hoffman.

"A Review of the American Species of Scomberomorus," by Seth E. Meek and Robert G. Newland.

Tunisian Flints.—Dr. D. G. BRINTON remarked that the flints presented through him this evening had been received from the eminent archæologist, the Marquis de Nadaillac, whose son, an officer in the French army, obtained them at the station of Ras-el-Oued, near Biban, on the southeastern coast of Tunis. The specimens consist of flint chips, arrow-points, and a semi-lunar shaped implement of small size, which resembles the "stemmed scrapers" found in America. This form was obtained from the lower levels, and is characteristic, in France, of the later productions of the stone age, especially of that epoch called by French archæologists "the epoch of Robenhausen," from the locality of that name in Switzerland. Chronologically, this is the first epoch of the appearance of man on the globe, the previous implement-using animals being more properly anthropoids. Those made use of stone only, not having learned the dressing of bone or horn. This view adds to the interest of the query as to the purpose of these scrapers, as they are called in default of a better name. That they were an important tool to the primitive man is evident from their wide distribution. They have been found in